SEQUENCE LISTING

<110> Kinney, Anthony J.
Kader, Gary M.
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Brian, McGonigle
Odell, Joan T.
Yu, Xiaodan

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<141> 2001-05-06

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<151> 2000-01-26

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<151> 1999-01-27

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Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
        35                  40                  45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
    50                  55                  60

Lys Lys His Gly Pro Leu Phe Ser Leu Ser Phe Gly Ser Met Pro Thr
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Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys Tyr Leu
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Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
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Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
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Tyr Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp Gln Val
385                 390                 395                 400

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        435                 440                 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
    450                 455                 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465                 470                 475                 480

Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
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Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
35 40 45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
50 55 60

Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
65 70 75 80

Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
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Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
100 105 110

Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp

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Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Pro Asn Ala Thr Thr
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Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Thr Arg Lys Phe Leu
145                 150                 155                 160

Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
                165                 170                 175

Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
            180                 185                 190

Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
        195                 200                 205

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
    210                 215                 220

Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
225                 230                 235                 240

Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
                245                 250                 255

Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
            260                 265                 270

Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys
        275                 280                 285

Ile Thr Lys Asp His Ile Glu Gly Leu Val Val Asp Phe Phe Ser Ala
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Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
305                 310                 315                 320

Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
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Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
            340                 345                 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
        355                 360                 365

Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
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Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
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Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
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Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu Asp Leu
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Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
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Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
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Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
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Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
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Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
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Ile Gly Val Ala Ser Lys Leu Leu Ser
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35 40 45

Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Ser Phe Gly Ser Met
50 55 60

Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
65 70 75 80

Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Thr
85 90 95

Arg Arg Leu Thr Tyr Asp Asn Ser Val Ala Met Val Pro Phe Gly Pro
100 105 110

Tyr Trp Arg Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
115 120 125

Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
130 135 140

Phe Leu Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp
145 150 155 160

Val Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
165 170 175

Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
180 185 190

Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
195 200 205

Tyr Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
210 215 220

Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Gly Ile
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Val Arg Arg Arg Glu Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly
245 250 255

Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
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275 280 285

Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
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Glu Leu Ile Asn Asn Pro Arg Val Leu Gln Lys Ala Arg Glu Glu Val
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Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
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Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
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Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp
370 375 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
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Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu
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Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
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Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
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Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
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Gly Gln Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg
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Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
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            20                  25                  30

His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
        35                  40                  45

Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
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    50                  55                  60

Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
65                  70                  75                  80

Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
                85                  90                  95

Arg Arg Leu Thr Tyr Asp Ser Leu Val Ala Met Val Pro Phe Gly Pro
            100                 105                 110

Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
        115                 120                 125

Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
    130                 135                 140

Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
145                 150                 155                 160

Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
                165                 170                 175

Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
            180                 185                 190

Lys Ile Tyr Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
        195                 200                 205

His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
    210                 215                 220

Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
225                 230                 235                 240

Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly
                245                 250                 255

Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu
            260                 265                 270

Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
        275                 280                 285

Ser Ala Gly Ile Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
    290                 295                 300

Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val
305                 310                 315                 320

Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
                325                 330                 335

Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
            340                 345                 350

Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
        355                 360                 365

Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
    370                 375                 380
```

```
Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
385                 390                 395                 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu
                405                 410                 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
            420                 425                 430

Gly Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
        435                 440                 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
    450                 455                 460

Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
465                 470                 475                 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
                485                 490                 495

Ala Arg Ile
```

<210> 19
<211> 1501
<212> DNA
<213> Lens culinaris

<400> 19

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tgtttctgca cttgcgtccc acacccactg caaaatcaaa agcacttcgc catctcccaa     60
acccaccaag cccaaagcct cgtcttccct tcataggaca ccctcatctc ttaaaagaca    120
aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggtcccttа ttctccctct    180
actttggctc catgccaacc gttgttgcct ccacaccaga attgttcaag ctcttcctcc    240
aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctcagccata agacgcctca    300
cctatgatag ctcagtggcc atggttccat tcggacctta ctggaagttc gtgaggaagc    360
tcatcatgaa cgaccttctc aacgccacca ccgtcaacaa gctcaggcct ttgaggaccc    420
aacagatccg caagttcctt agggttatgg cccaaagcgc agaggcccag aagccccttg    480
acgtcaccga ggagcttctc aaatggacca acagcaccat ctccatgatg atgctcggcg    540
aggctgagga gatcagagac atcgctcgcg aggttcttaa gatcttcggc gaatacagcc    600
tcactgactt catctggcct ttgaagtatc tcaaggttgg aaagtatgag aagaggattg    660
atgacatctt gaacaagttc gaccctgtcg ttgaaagggt catcaagaag cgccgtgaga    720
tcgtcagaag gagaaagaac ggagaagttg ttgagggcga ggccagcggc gtcttcctcg    780
acactttgct tgaattcgct gaggacgaga ccatggagat caaaattacc aaggagcaaa    840
tcaagggcct tgttgtcgac tttttctctg cagggacaga ttccacagcg gtggcaacag    900
agtgggcatt ggcagagctc atcaacaatc ccagggtgtt gcaaaaggct cgtgaggagg    960
tctacagtgt tgtgggcaaa gatatactcg ttgacgaagt tgacactcaa aaccttcctt   1020
acattagggc cattgtgaag gagacattcc gaatgcaccc accactccca gtggtcaaaa   1080
gaaagtgcac agaagagtgt gagattaatg ggcatgtgat cccagaggga gcattggttc   1140
ttttcaatgt ttggcaagta ggaagggacc ccaaatactg ggacagacca tcagaattcc   1200
gtcccgagag gttcttagaa actggtgctg aaggggaagc agggcctctt gatcttaggg   1260
gccagcattt ccaactcctc ccatttgggt ctgggaggag aatgtgccct ggtgtcaatt   1320
tggctacttc aggaatggca acacttcttg catctcttat ccaatgcttt gacctgcaag   1380
tgctgggccc tcaaggacaa atattgaaag gtgatgatgc caaagttagc atggaagaga   1440
gagctggcct cacagttcca agggcacata gtctcgtttg tgttccactt gcaaggatcg   1500
g                                                                   1501
```

<210> 20
<211> 499
<212> PRT

<213> Lens culinaris

<400> 20

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Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
1               5                  10                  15

His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
            20                  25                  30

His Pro His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
        35                  40                  45

Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
    50                  55                  60

Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
65                  70                  75                  80

Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
                85                  90                  95

Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro
            100                 105                 110

Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
        115                 120                 125

Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
    130                 135                 140

Phe Leu Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp
145                 150                 155                 160

Val Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
                165                 170                 175

Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
            180                 185                 190

Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
        195                 200                 205

Tyr Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
    210                 215                 220

Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
225                 230                 235                 240

Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly
                245                 250                 255

Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
            260                 265                 270

Ile Lys Ile Thr Lys Glu Gln Ile Lys Gly Leu Val Val Asp Phe Phe
        275                 280                 285

Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
    290                 295                 300

Glu Leu Ile Asn Asn Pro Arg Val Leu Gln Lys Ala Arg Glu Glu Val
```

```
305                 310                 315                 320

Tyr Ser Val Val Gly Lys Asp Ile Leu Val Asp Glu Val Asp Thr Gln
                325                 330                 335

Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
            340                 345                 350

Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
        355                 360                 365

Asn Gly His Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp
    370                 375                 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
385                 390                 395                 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu
                405                 410                 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
            420                 425                 430

Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
        435                 440                 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
    450                 455                 460

Gly Gln Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg
465                 470                 475                 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
                485                 490                 495

Ala Arg Ile
```

<210> 21
<211> 1501
<212> DNA
<213> Lens culinaris

<400> 21

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acccaccaag cccaaagcct cgtcttccct tcataggaca ccttcatctc ttaaaagaca    120
aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggtccctta ttctctctct    180
actttggctc catgccaacc gttgttgcct ccacaccaga attgttcaag ctcttcctcc    240
aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctcagccata agacgcctca    300
cctatgatag ctcagtggcc atggttccct tcggacctta ctggaagttc gtgaggaagc    360
tcatcatgaa cgaccttctc aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc    420
aacagatccg caagttcctt agggttatgg cccaaggcgc agaggcacag aagccccttg    480
acttgaccga ggagcttctg aaatggacca acagcaccat ctccatgatg gtgctcggcg    540
aggctgagga gatcagagac atcgctcgcg aggttcttaa gatctttggc gaatacagcc    600
tcactgactt catctggcca ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg    660
acgacatctt gaacaagttc gaccctgtcg ttgaaagagt catcaagaag cgccgtgaga    720
tcgtgaggag gagaaagaac ggagaggttg ttgagggtga ggtcagcggg gttttccttg    780
acactttgct tgaattcgct gaggatgaga ccatggagat caaaatcacc aaggaccaca    840
tcaagggtct tgttgtcgac tttttctcgg caggaacaga ctccacagcg gtggcaacag    900
agtgggcatt ggcagaactc atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg    960
tctacagtgt tgtgggaaag gacagacttg tggacgaagt tgacactcaa aaccttcctt   1020
```

```
acattagagc aatcgtgaag gagacattcc gcatgcaccc gccactccca gtggtcaaaa   1080
gaaagtgcac agaagagtgt gagattaatg gatgtgtgac cccagaggga gcattgattc   1140
tcttcaatgt atggcaagta ggaagagacc ccaaatactg ggacagacca tcggagttcc   1200
gtcctgagag gttcctagag acaggggctg aaggggaagc aaggcctctt gatcttaggg   1260
gacgacattt tcaacttctc ccatttgggt ctgggaggag aatgtgccct ggagtcaatc   1320
tggctacttc gggaatggca acacttcttg catctcttat tcagtgcttt gacttgcagg   1380
tgctgggtcc acaaggacag atattgaagg gtggtgacgc caaagttagc atggaagaga   1440
gagccggcct cactgttcca agggcacata gtcttgtctg tgttccactt gcaaggatcg   1500
g                                                                   1501
```

<210> 22
<211> 499
<212> PRT
<213> Lens culinaris

<400> 22

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Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
1               5                  10                  15

His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
            20                  25                  30

His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
        35                  40                  45

Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
    50                  55                  60

Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
65                  70                  75                  80

Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
                85                  90                  95

Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro
            100                 105                 110

Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
        115                 120                 125

Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
    130                 135                 140

Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
145                 150                 155                 160

Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
                165                 170                 175

Val Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
            180                 185                 190

Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
        195                 200                 205

His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
    210                 215                 220

Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
225                 230                 235                 240
```

```
Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly
                245                 250                 255

Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
            260                 265                 270

Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
        275                 280                 285

Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
    290                 295                 300

Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val
305                 310                 315                 320

Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
                325                 330                 335

Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
            340                 345                 350

Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
        355                 360                 365

Asn Gly Cys Val Thr Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
    370                 375                 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
385                 390                 395                 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu
                405                 410                 415

Asp Leu Arg Gly Arg His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
            420                 425                 430

Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
        435                 440                 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
    450                 455                 460

Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
465                 470                 475                 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
                485                 490                 495

Ala Arg Ile
```

<210> 23
<211> 1566
<212> DNA
<213> Phaseolus aureus

<400> 23

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actcccactg caaaatcaaa agcacttcgc catctcccaa acccaccaag cccaaagcct    120
cgtcttccct tcataggaca ccttcatctc ttaaaagaca aacttctcca ctacgcactc    180
atcgacctct ccaaaaaaca tggtccctta ttctctctct actttggctc catgccaacc    240
```

```
gttgttgcct ccacaccaga attgttcaag ctcttcctcc aaacgcacga ggcaacttcc    300
ttcaacacaa ggttccaaac ctcagccata agacgcctca cctatgatag ctcagtggcc    360
atggttccct tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc    420
aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc aacagatccg caagttcctt    480
agggttatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg    540
aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac    600
atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcactgactt catctggcca    660
ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagttc    720
gaccctgtcg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac    780
ggagaggttg ttgagggtga ggtcagcggg gttttccttg acactttgct tgaattcgct    840
gaggatgaga ccatggagat caaaatcacc aaggaccaca tcaagggtct tgttgtcgac    900
tttttctcgg caggaacaga ctccacagcg gtggcaacag agtgggcatt ggcagaactc    960
atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg cctacagtgt tgtgggaaag   1020
gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag   1080
gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac agaagagtgt   1140
gagattaatg gatatgtgat cccagaggga gcattgattc tcttcaatgt atggcaagta   1200
ggaagagacc ccaaatactg ggacagacca tcggagttcc gtcctgagag gttcctagag   1260
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc   1320
ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca   1380
acacttctcg catctcttat tcagtgcttt gacttgcaag tgctgggtcc acaaggacag   1440
atattgaagg gtggtgacgc caaagttagc atggaagaga gagccggcct cactgttcca   1500
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tctaaa                                                              1566
```

<210> 24
<211> 522
<212> PRT
<213> Phaseolus aureus

<400> 24

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Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
1               5                  10                  15

His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
            20                  25                  30

Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
        35                  40                  45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
    50                  55                  60

Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
65                  70                  75                  80

Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
                85                  90                  95

Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
            100                 105                 110

Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
        115                 120                 125

Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
    130                 135                 140

Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
145                 150                 155                 160

Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
```

```
                165                 170                 175

Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Leu
            180                 185                 190

Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
        195                 200                 205

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
    210                 215                 220

Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
225                 230                 235                 240

Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
                245                 250                 255

Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
            260                 265                 270

Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys
        275                 280                 285

Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
    290                 295                 300

Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
305                 310                 315                 320

Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Ala Tyr Ser
                325                 330                 335

Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
            340                 345                 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
        355                 360                 365

Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
    370                 375                 380

Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
385                 390                 395                 400

Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
                405                 410                 415

Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
            420                 425                 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
        435                 440                 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
    450                 455                 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465                 470                 475                 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
                485                 490                 495
```

```
Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
            500                 505                 510

Ile Gly Val Ala Ser Lys Leu Leu Ser Lys
        515                 520
```

<210> 25
<211> 1566
<212> DNA
<213> Phaseolus aureus

<400> 25

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atgttgctgg aacttgcact tggtttattg gttttggctc tgtttctgca cttgcgtccc     60
acacccactg caaaatcaaa agcacttcgc catctcccaa acccaccaag cccaaagcct    120
cgtcttccct tcataggaca ccttcatctc ttaaaagaca aacttctcca ctacgcgctc    180
atcgacctct ccaaaaaaca tggtccctta ttctctctct actttggctc catgccaacc    240
gttgttgcct ccacaccaga attgttcaag ctcttcctcc aaacgcacga ggcaacttcc    300
ttcaacacaa ggttccaaac ctcagccata agacgcctca cctatgatag ctcagtggcc    360
atggttccct tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc    420
aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc aacagatccg caagttcctt    480
agggctatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg    540
aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac    600
atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcactgactt catctggcca    660
ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagttc    720
gaccctgtcg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac    780
ggagaggttg ttgagggtga ggtcagcggg gttttccttg acactttgct tgaattcgct    840
gaggatgaga ccatggagat caaaatcacc aaggaccaca tcaagggtct tgttgtcgac    900
tttttctcgg caggaacaga ctccacagcg gtggcaacag agtgggcatt ggcagaactc    960
atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag   1020
gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag   1080
gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac ggaagagtgt   1140
gagattaatg gatatgtgat cccagaggga gcattgattc tcttcaatgt atggcaagta   1200
ggaagagacc ccaaatactg ggacagacca tcggagttcc gtcctgagag gttcctagag   1260
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc   1320
ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca   1380
acacttcttg catctcttat tcagtgcttt gacttgcaag tgctgggtcc acaaggacag   1440
atattgaagg gtggtgacgc caaagttagc atggaagaga gagccggcct cactgttcca   1500
agggcacata gtcttgtctg tgttccactt gcaaggatcg gcgttgcatc taaactcctt   1560
tcttaa                                                              1566
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<210> 26
<211> 521
<212> PRT
<213> Phaseolus aureus

<400> 26

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Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
1               5                   10                  15

His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
            20                  25                  30

Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
        35                  40                  45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
    50                  55                  60

Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
65                  70                  75                  80
```

```
Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
                85                  90                  95

Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
            100                 105                 110

Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
        115                 120                 125

Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
    130                 135                 140

Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
145                 150                 155                 160

Arg Ala Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
                165                 170                 175

Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
            180                 185                 190

Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
        195                 200                 205

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
    210                 215                 220

Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
225                 230                 235                 240

Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
                245                 250                 255

Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
            260                 265                 270

Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys
        275                 280                 285

Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
    290                 295                 300

Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
305                 310                 315                 320

Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
                325                 330                 335

Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
            340                 345                 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
        355                 360                 365

Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
    370                 375                 380

Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
385                 390                 395                 400
```

```
Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
                405                 410                 415

Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
            420                 425                 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
        435                 440                 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
    450                 455                 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465                 470                 475                 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
                485                 490                 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
            500                 505                 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
        515                 520
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<210> 27
<211> 1566
<212> DNA
<213> Phaseolus aureus

<400> 27

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atgttgctgg aacttgcact tggtttattg gttttggctc tgtttctgca cttgcgtccc     60
acacccactg caaaatcaaa agcacttcgc catctcccaa acccaccaag cccaaagcct    120
cgtcttccct tcataggaca ccttcatctc ttaaaagaca aacttctcca ctacgcactc    180
atcgacctct ccaaaaaaca tggtccctta ttctctctct actttggctc catgccaacc    240
gttgttgcct ccacaccaga attgttcaag ctcttcctcc aaacgcacga ggcaacttcc    300
ttcaacacaa ggttccaaac ctcagccata agacgcctca cctatgatag ctcagtggcc    360
atggttccct tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc    420
aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc aacagatccg caagttcctt    480
agggttatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg    540
aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac    600
atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcactgactt catctggcca    660
ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagttc    720
gaccctgtcg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac    780
ggagaggttg ttgagggtga ggtcagcggg gttttccttg acactttgct tgaattcgct    840
gaggatgaga ccacggagat caaaatcacc aaggaccaca tcaagggtct tgttgtcgac    900
tttttctcgg caggaacaga ctccacagcg gtggcaacag agtgggcatt ggcagaactc    960
atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag   1020
gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag   1080
gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac agaagagtgt   1140
gagattaatg gatatgtgat cccagaggga gcattgattc tcttcaatgt atggcaagta   1200
ggaagagacc ccaaatactg ggacagacca tcggagttcc gtcctgagag gttcctagag   1260
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc   1320
ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca   1380
acacttcttg catctcttat tcagtgcttt gacttgcaag tgctgggtcc acaaggacag   1440
atattgaagg gtggtgacgc caaagttagc atggaagaga gggccggcct cactgttcca   1500
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tcttaa                                                              1566
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<210> 28
<211> 521
<212> PRT

<213> Phaseolus aureus

<400> 28

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Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
1               5                  10                  15

His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
            20                  25                  30

Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
        35                  40                  45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
    50                  55                  60

Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
65                  70                  75                  80

Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
                85                  90                  95

Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
            100                 105                 110

Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
        115                 120                 125

Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
    130                 135                 140

Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
145                 150                 155                 160

Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
                165                 170                 175

Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
            180                 185                 190

Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
        195                 200                 205

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
    210                 215                 220

Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
225                 230                 235                 240

Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
                245                 250                 255

Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
            260                 265                 270

Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu Ile Lys
        275                 280                 285

Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
    290                 295                 300

Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
```

```
305                 310                 315                 320

Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
                325                 330                 335

Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
            340                 345                 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
        355                 360                 365

Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
    370                 375                 380

Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
385                 390                 395                 400

Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
                405                 410                 415

Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
            420                 425                 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
        435                 440                 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
    450                 455                 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465                 470                 475                 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
                485                 490                 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
            500                 505                 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
        515                 520
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<210> 29
<211> 1566
<212> DNA
<213> Phaseolus aureus

<400> 29

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atgttgctgg aacttgcact tggtttattg gttttggctc tgtttctgca cttgcgtccc     60
acacccactg caaaatcaaa agcacttcgc catctcccaa acccaccaag cccaaagcct    120
cgtcttccct tcataggaca ccttcatctc ttaaaagaca aacttctcca ctacgcactc    180
atcgacctct ccaaaaaaca tggtccctta ttctctctct actttggctc catgccaacc    240
gttgttgcct ccacaccaga attgttcaag ctcttcctcc aaacgcacga ggcaacttcc    300
ttcaacacaa ggttccaaac ctcagccata agacgcctca cctatgatag ctcagtggcc    360
atggttccct tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc    420
aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc aacagatccg caagttcctt    480
agggttatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg    540
aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac    600
atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcactgactt catctggcca    660
ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagttc    720
gaccctgtcg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac    780
ggagaggttg ttgagggtga ggtcagcggg gttttccttg acactttgct tgaattcgct    840
```

```
gaggatgaga ccatggagat caaaatcacc aaggaccaca tcaagggtct tgttgtcgac    900
tttttctcgg caggaacaga ctccacagcg gaggcaacag agtgggcatt ggcagaactc    960
atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag   1020
gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag   1080
gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac agaagagtgt   1140
gagattaatg gatatgtgat cccagaggga gcattgattc tcttcaatgt atggcaagta   1200
ggaagagacc ccaaatactg ggacagacca tcggagttcc gtcctgagag gttcctagag   1260
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc   1320
ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca   1380
acacttcttg catctcttat tcagtgcttt gacttgcaag tgctgggtcc acaaggacag   1440
atattgaagg gtggtgacgc caaagttagc atggaagaga gagccggcct cactgttcca   1500
agggcacata gtcttgtctg tgttccactt gcaaggatcg gcgttgcatc taaactcctt   1560
tcttaa                                                              1566
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<210> 30
<211> 521
<212> PRT
<213> Phaseolus aureus

<400> 30

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Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
1               5                  10                  15

His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
            20                  25                  30

Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
        35                  40                  45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
    50                  55                  60

Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
65                  70                  75                  80

Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
                85                  90                  95

Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
            100                 105                 110

Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
        115                 120                 125

Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
    130                 135                 140

Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
145                 150                 155                 160

Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
                165                 170                 175

Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
            180                 185                 190

Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
        195                 200                 205

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
    210                 215                 220
```

```
Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
225                 230                 235                 240

Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
                245                 250                 255

Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
            260                 265                 270

Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys
        275                 280                 285

Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
    290                 295                 300

Gly Thr Asp Ser Thr Ala Glu Ala Thr Glu Trp Ala Leu Ala Glu Leu
305                 310                 315                 320

Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
                325                 330                 335

Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
            340                 345                 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
        355                 360                 365

Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
    370                 375                 380

Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
385                 390                 395                 400

Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
                405                 410                 415

Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
            420                 425                 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
        435                 440                 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
    450                 455                 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465                 470                 475                 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
                485                 490                 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
            500                 505                 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
        515                 520
```

<210> 31
<211> 1566
<212> DNA

<213> Trifolium pratense

<400> 31
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cgtcttccct tcataggaca ccttcatctc ttaaaagaca aacttctcca ctacgcactc 180
atcgacctct ccaaaaaaca tggtcccttа ttctctctct actttggctc catgccaacc 240
gttgttgcct ccacaccaga attgttcaag ctcttcctcc aaacgcacga ggcaacttcc 300
ttcaacacaa ggttccaaac ctcagccata agacgcctca cctatgatag ctcagtggcc 360
atggttccca tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc 420
aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc aacagatccg caagttcctt 480
agggttatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg 540
aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac 600
atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcactgactt catctggcca 660
ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagttc 720
gaccctgtcg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac 780
ggagaggttg atgagggtga ggtcagcggg gttttccttg acactttgct tgaattcgct 840
gaggatgaga ccacggagat caaaatcacc aaggaccaca tcaagggtct tgttgtcgac 900
tttttctcgg cagggacaga ctccacagcg gtggcaacag agtgggcatt ggcagaactc 960
atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag 1020
gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag 1080
gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac agaagagtgt 1140
gagattaatg gatatgtgat cccagaggga gcattgattc tcttcaatgt atggcaagta 1200
ggaagagacc ccaaatactg ggacagacca tcggagttcc gtcctgagag gttcctagag 1260
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc 1320
ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca 1380
acacttcttg catctcttat tcagtgcttt gacttgcaag tgctgggtcc acaaggacag 1440
atattgaagg gtggtgacgc caaagttagc atggaagaga gggccggcct cactgttcca 1500
agggcacata gtcttgtctg tgttccactt gcaaggatcg gcgttgcatc taaactcctt 1560
tcttaa 1566

<210> 32
<211> 521
<212> PRT
<213> Trifolium pratense

<400> 32
Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
1 5 10 15

His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
20 25 30

Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
35 40 45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
50 55 60

Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
65 70 75 80

Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
85 90 95

Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
100 105 110

Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Ile Gly Pro Tyr Trp
115 120 125

```
Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
    130                 135                 140

Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
145                 150                 155                 160

Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
                165                 170                 175

Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
            180                 185                 190

Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
        195                 200                 205

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
    210                 215                 220

Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
225                 230                 235                 240

Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
                245                 250                 255

Arg Arg Lys Asn Gly Glu Val Asp Glu Gly Glu Val Ser Gly Val Phe
            260                 265                 270

Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu Ile Lys
        275                 280                 285

Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
    290                 295                 300

Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
305                 310                 315                 320

Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
                325                 330                 335

Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
            340                 345                 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
        355                 360                 365

Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
    370                 375                 380

Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
385                 390                 395                 400

Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
                405                 410                 415

Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
            420                 425                 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
        435                 440                 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
```

```
    450                 455                 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465                 470                 475                 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
                485                 490                 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
            500                 505                 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
        515                 520
```

<210> 33
<211> 1566
<212> DNA
<213> Trifolium pratense

<400> 33

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cgtcttccct tcataggaca ccttcatctc ttaaaagaca aacttctcca ctacgcactc    180
atcgacctct ccaaaaaaca tggtccctta ttctctctct actttggctc catgccaacc    240
gttgttgcct ccacaccaga attgttcaag ctcttcctcc aaacgcacga ggcaacttcc    300
ttcaacacaa ggttccaaac ctcagccata agacgcctca cctatgatag ctcagtggcc    360
atggttccct tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc    420
aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc aacagatccg caagttcctt    480
agggttatgg cccaaggcgc agaggcacag aagccccttg acttgaccga ggagcttctg    540
aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac    600
atcgctcgcg aggttcttaa gatctttggc gaatacagcc tcactgactt catctggcca    660
ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg acgacatctt gaacaagttc    720
gaccctgtcg ttgaaagagt catcaagaag cgccgtgaga tcgtgaggag gagaaagaac    780
ggagaggttg ttgagggtga ggtcagcggg gttttccttg acactttgct tgaattcgct    840
gaggatgaga ccacggagat caaaatcacc aaggaccaca tcaagggtct tgttgtcgac    900
tttttctcgg caggaacaga ctccacagcg gtggcaacag agtgggcatt ggcagaactc    960
atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg tctacagtgt tgtgggaaag   1020
gacagacttg tggacgaagt tgacactcaa aaccttcctt acattagagc aatcgtgaag   1080
gagacattcc gcatgcaccc gccactccca gtggtcaaaa gaaagtgcac agaagagtgt   1140
gagattaatg gatatgtgat cccagaggga gcattgattc tcttcaatgt atggcaagta   1200
ggaagagacc ccaaatactg ggacagacca tcggagttcc gtcctgagag gttcctagag   1260
acaggggctg aaggggaagc aaggcctctt gatcttaggg gacaacattt tcaacttctc   1320
ccatttgggt ctgggaggag aatgtgccct ggagtcaatc tggctacttc gggaatggca   1380
acacttcttg catctcttat tcagtgcttt gacttgcaag tgctgggtcc acaaggacag   1440
atattgaagg gtggtgacgc caaagttagc atggaagaga gggccggcct cactgttcca   1500
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tcttaa                                                              1566
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<210> 34
<211> 521
<212> PRT
<213> Trifolium pratense

<400> 34

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Met Leu Leu Glu Leu Ala Leu Gly Leu Leu Val Leu Ala Leu Phe Leu
1               5                   10                  15

His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg His Leu
            20                  25                  30

Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
```

```
        35                  40                  45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
    50                  55                  60

Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met Pro Thr
65                  70                  75                  80

Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr His
                85                  90                  95

Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg Arg
            100                 105                 110

Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
        115                 120                 125

Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
    130                 135                 140

Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
145                 150                 155                 160

Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp Leu Thr
                165                 170                 175

Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
            180                 185                 190

Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
        195                 200                 205

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His Leu
    210                 215                 220

Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
225                 230                 235                 240

Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
                245                 250                 255

Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val Phe
            260                 265                 270

Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu Ile Lys
        275                 280                 285

Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
    290                 295                 300

Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
305                 310                 315                 320

Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr Ser
                325                 330                 335

Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
            340                 345                 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
        355                 360                 365
```

```
Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
    370                 375                 380

Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp Gln Val
385                 390                 395                 400

Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
                405                 410                 415

Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp Leu
            420                 425                 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
        435                 440                 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
    450                 455                 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465                 470                 475                 480

Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
                485                 490                 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
            500                 505                 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
        515                 520
```

<210> 35
<211> 1563
<212> DNA
<213> Pisum sativum

<400> 35

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atgttgctgg aacttgcact tggtttgttt gtgttagctt tgtttctgca cttgcgtccc     60
acaccaagcg caaaatcaaa agcacttcgc cacctcccaa accctccaag cccaaagcct    120
cgtcttccct tcattggcca ccttcacctc ttaaaagata aacttctcca ctatgcactc    180
atcgatctct ccaaaaagca tggccccttа ttctctctct ccttcggctc catgccaacc    240
gtcgttgcct ccacccctga gttgttcaag ctcttcctcc aagcccacga ggcaacttcc    300
ttcagcacaa ggttccaaac ctctgccgta agacgcctca cttacgacaa ctctgtggcc    360
atggttccat tcggacctta ctggaagttc gtgaggaagc tcatcatgaa cgaccttctc    420
aacgccacca ccgtcaacga gctcaggcct ttgaggaccc aacagatccg caagttcctt    480
agggttatgg cccaaagcgc agaggcccag aagccccttg acgtcaccga ggagcttctc    540
aaatggacca acagcaccat ctccatgatg atgctcggcg aggctgagga gatcagagac    600
atcgctcgcg aggtccttaa gatcttcggc gaatacagcc tcactgactt catctggcct    660
ttgaagtatc tcaaggttgg aaagtatgag aagaggattg atgacatctt gaacaagttc    720
gaccctgtcg ttgaaagggt catcaagaag cgccgtgaga tcgtcagaag gagaaagaac    780
ggagaagttg ttgagggcga ggccagcggc gtcttcctcg acactttgct tgaattcgct    840
gaggacgaga ccatggagat caaaattacc aaggagcaaa tcaagggcct tgttgtcgac    900
tttttctctg cagggacaga ttccacagcg gtggcaacag agtgggcatt ggcagagctc    960
atcaacaatc ccagggtgtt gcaaaaggct cgtgaggagg tctacagtgt tgtgggcaaa   1020
gatagactcg ttgacgaagt cgacactcaa aaccttcctt acattagggc cattgtgaag   1080
gagacattcc gaatgcaccc accactccca gtggtcaaaa gaaagtgcac agaagagtgt   1140
gagattaatg ggtatgtgat cccagaggga gcattggttc ttttcaatgt ttggcaagta   1200
ggaaaggacc ccaaatactg ggacagacca tcagaattcc gtcccgagag gttcttagaa   1260
actggcgctg aaggggaagc agggcctctt gatcttaggg gccagcattt ccaactcctc   1320
ccatttgggt ctgggaggag aatgtgccct ggtgtcaatt tggctacttc aggaatggca   1380
acacttcttg catctcttat ccaatgcttt gacctgcaag tgctgggccc tcaaggacaa   1440
```

```
atattgaaag gtgacgatgc caaagttagc atggaagaga gagctggcct caccgttcca   1500
agggcacata gtctcgtttg tgttccactt gcaaggatcg gcgttgcatc taaactcctt   1560
tct                                                                 1563
```

<210> 36
<211> 521
<212> PRT
<213> Pisum sativum

<400> 36

```
Met Leu Leu Glu Leu Ala Leu Gly Leu Phe Val Leu Ala Leu Phe Leu
1               5                  10                  15

His Leu Arg Pro Thr Pro Ser Ala Lys Ser Lys Ala Leu Arg His Leu
            20                  25                  30

Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His Leu
        35                  40                  45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu Ser
    50                  55                  60

Lys Lys His Gly Pro Leu Phe Ser Leu Ser Phe Gly Ser Met Pro Thr
65                  70                  75                  80

Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Ala His
                85                  90                  95

Glu Ala Thr Ser Phe Ser Thr Arg Phe Gln Thr Ser Ala Val Arg Arg
            100                 105                 110

Leu Thr Tyr Asp Asn Ser Val Ala Met Val Pro Phe Gly Pro Tyr Trp
        115                 120                 125

Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
    130                 135                 140

Val Asn Glu Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe Leu
145                 150                 155                 160

Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp Val Thr
                165                 170                 175

Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met Leu
            180                 185                 190

Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
        195                 200                 205

Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys Tyr Leu
    210                 215                 220

Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
225                 230                 235                 240

Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val Arg
                245                 250                 255

Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly Val Phe
            260                 265                 270
```

```
Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile Lys
        275                 280                 285

Ile Thr Lys Glu Gln Ile Lys Gly Leu Val Val Asp Phe Phe Ser Ala
    290                 295                 300

Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu Leu
305                 310                 315                 320

Ile Asn Asn Pro Arg Val Leu Gln Lys Ala Arg Glu Glu Val Tyr Ser
                325                 330                 335

Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn Leu
            340                 345                 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
        355                 360                 365

Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn Gly
    370                 375                 380

Tyr Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp Gln Val
385                 390                 395                 400

Gly Lys Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro Glu
                405                 410                 415

Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu Asp Leu
            420                 425                 430

Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg Met
        435                 440                 445

Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu Leu Ala
    450                 455                 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465                 470                 475                 480

Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
                485                 490                 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
            500                 505                 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
        515                 520
```

<210> 37
<211> 1496
<212> DNA
<213> Trifolium repens

<400> 37

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tctcacttgc gtcccacacc aagtgcaata tcaaaagcac ttcgccacct cccaaaccct     60
ccaagcccaa ggcctcgtct tcccttcatt ggccaccttc acctcttaaa agataaactt    120
ctccactatg cacccatcga tctctccaaa aagcatggcc ccttattctc tctctccttc    180
ggctccatgc caaccgtcgt tgcctccacc cctgagttgt tcaagctctt cctccaaacc    240
cacgaggcaa cttccttcaa cacaaggttc caaacctctg ccataagaca cctcacttac    300
gacaactctg tggccatggt tccattcgga ccttactgga agttcgtgag gaagctcatc    360
atgaacgacc ttctcaacgc caccaccgtc aacaagctca ggcctttgag gacccaacag    420
```

```
atccgcaagt tccttagggt tatggcccaa agcgcagagg cccagaagcc ccttgacgtc    480
accgaggagc ttctcaaatg gaccaacagc accatctcca tgatgatgct cggcgaggct    540
gaggagatca gagacatcgc tcgcgaggtt cttaagatct tcggcgaata cagcctcact    600
gacttcatct ggcctttgaa gtacctcaag gttggaaagt atgagaagag gattgatgac    660
atcttgaaca agttcgaccc tgtcgttgaa agggtcatca agaagcgccg tgagatcgtc    720
agaaggagaa agaacggaga agttgttgag ggcgaggcca gcggcgtctt cctcgacact    780
ttgcttgaat tcgctgagga cgagaccatg gagatcaaaa ttaccaagga gcaaatcaag    840
ggccttgttg tcgacttttt ctctgcaggg acagattcca cagcggtggt aacagagtgg    900
gcattggcag agctcatcaa caatcccagg gtgttgcaaa aggctcgtga ggaggtctac    960
agtgttgtgg gcaaagatag actcgttgac gaagttgaca ctcaaaacct tccttacatt   1020
agggccattg tgaaggagac attccgaatg cacccaccac tcccagtggt caaaagaaag   1080
tgcacagaag agtgtgagat taatgggtat gtgatcccag agggagcatt ggttcttttc   1140
aatgtttggc aagtaggaag ggaccccaaa tactgggaca gaccatcaga atcccgtccc   1200
gagaggttct tagaaactgg tgctgaaggg gaagcagggc ctcttgatct taggggccag   1260
catttccaac tcctcccatt tgggtctggg aggagaatgt gccctggtgt cagtttggct   1320
acttcaggaa tggcaacact tcttgcatct cttatccaat gctttgacct gcaagtgctg   1380
ggccctcaag gacaaatatt gaaaggtgat gatgccaaag ttagcatgga agagagagct   1440
ggcctcacag ttccaagggc acatagtctc gtttgtgttc cacttgcaag gatcgg       1496
```

<210> 38
<211> 498
<212> PRT
<213> Trifolium repens

<400> 38

```
Ser His Leu Arg Pro Thr Pro Ser Ala Ile Ser Lys Ala Leu Arg His
1               5                   10                  15

Leu Pro Asn Pro Pro Ser Pro Arg Pro Arg Leu Pro Phe Ile Gly His
            20                  25                  30

Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Pro Ile Asp Leu
        35                  40                  45

Ser Lys Lys His Gly Pro Leu Phe Ser Leu Ser Phe Gly Ser Met Pro
    50                  55                  60

Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr
65                  70                  75                  80

His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg
                85                  90                  95

His Leu Thr Tyr Asp Asn Ser Val Ala Met Val Pro Phe Gly Pro Tyr
            100                 105                 110

Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr
        115                 120                 125

Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe
    130                 135                 140

Leu Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp Val
145                 150                 155                 160

Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met Met
                165                 170                 175

Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys
            180                 185                 190
```

Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys Tyr
195 200 205

Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys
210 215 220

Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val
225 230 235 240

Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly Val
245 250 255

Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile
260 265 270

Lys Ile Thr Lys Glu Gln Ile Lys Gly Leu Val Val Asp Phe Phe Ser
275 280 285

Ala Gly Thr Asp Ser Thr Ala Val Val Thr Glu Trp Ala Leu Ala Glu
290 295 300

Leu Ile Asn Asn Pro Arg Val Leu Gln Lys Ala Arg Glu Glu Val Tyr
305 310 315 320

Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn
325 330 335

Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro
340 345 350

Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn
355 360 365

Gly Tyr Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp Gln
370 375 380

Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Ser Arg Pro
385 390 395 400

Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu Asp
405 410 415

Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg
420 425 430

Met Cys Pro Gly Val Ser Leu Ala Thr Ser Gly Met Ala Thr Leu Leu
435 440 445

Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly
450 455 460

Gln Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg Ala
465 470 475 480

Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala
485 490 495

Arg Ile

<210> 39

<211> 1501
<212> DNA
<213> Trifolium repens

<400> 39
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aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggtccctta ttctctctct 180
actttggctc catgccaacc gttgttgcct ccacaccaga attgttcaag ctcttcctcc 240
aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctcagccata agacgcctca 300
cctacgacaa ctctgtggcc atggttccat tcggacctta ctggaagttc gtgaggaagc 360
tcatcatgaa cgaccttctc aacgccacca ccgtcaacaa gctcaggcct ttgaggaccc 420
aacagatccg caagttcctt agggttatgg cccaaagcgc agaggcccag aagccccttg 480
acgtcaccga ggagcttctc aaatggacca acagcaccat ctccatgatg atgctcggcg 540
aggctgagga gatcagagac atcgctcgcg aggttcttaa gatcttcggc gaatacagcc 600
tcactgactt catctggcct ttgaagtatc tcaaggttgg aaagtatgag aagaggattg 660
atgacatctt gaacaagttc gaccctgtcg ttgaaagagt catcaagaag cgccgtgaga 720
tcgtcagaag gagaaagaac ggagaagttg ttgagggcga ggccagcggc gtcttcctcg 780
acactttgct tgaattcgct gaggacgaga ccatggagat caaaattacc aaggagcaaa 840
tcaagggcct tgttgtcgac tttttctctg cagggacaga ttccacagcg gtggcaacag 900
agtgggcatt ggcagagctc atcaacaatc ccaaggtgtt gcaaaaggct cgtgaggagg 960
cctacagtgt tgtgggcaaa gatagactcg ttgacgaagt tgacactcaa aaccttcctt 1020
acattagggc cattgtgaag gagacattcc gaatgcaccc accactccca gtggtcaaaa 1080
gaaagtgcac agaagagtgt gggattaatg ggtatgtgat cccagaggga gcattggttc 1140
ttttcaatgt ttggcaagta ggaagggacc ccaaatactg ggacagacca tcagaattcc 1200
gtcccgagag gttcttagaa actggtgctg aaggggaagc agggcctctt gatcttaggg 1260
gccagcattt ccaactcctc ccatttgggt ctgggaggag aatgtgccct ggtgtcaatt 1320
tggctacttc aggaatggca acacttcttg catctcttat ccaatgcttt gacctgcaag 1380
tgctgggccc tcaaggacaa atattgaaag gtgatgatgc caaagttagc atggaagaga 1440
gagctggcct cacagttcca agggcacata gtctcgtttg tgttccactt gcaaggatcg 1500
g 1501

<210> 40
<211> 499
<212> PRT
<213> Trifolium repens

<400> 40
Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
1 5 10 15

His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
20 25 30

His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
35 40 45

Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
50 55 60

Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
65 70 75 80

Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
85 90 95

Arg Arg Leu Thr Tyr Asp Asn Ser Val Ala Met Val Pro Phe Gly Pro
100 105 110

Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
115 120 125

```
Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
    130                 135                 140

Phe Leu Arg Val Met Ala Gln Ser Ala Glu Ala Gln Lys Pro Leu Asp
145                 150                 155                 160

Val Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
                165                 170                 175

Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
            180                 185                 190

Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
        195                 200                 205

Tyr Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
    210                 215                 220

Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
225                 230                 235                 240

Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Ala Ser Gly
                245                 250                 255

Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
            260                 265                 270

Ile Lys Ile Thr Lys Glu Gln Ile Lys Gly Leu Val Val Asp Phe Phe
        275                 280                 285

Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
    290                 295                 300

Glu Leu Ile Asn Asn Pro Lys Val Leu Gln Lys Ala Arg Glu Glu Ala
305                 310                 315                 320

Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
                325                 330                 335

Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
            340                 345                 350

Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Gly Ile
        355                 360                 365

Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Val Leu Phe Asn Val Trp
    370                 375                 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
385                 390                 395                 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Gly Pro Leu
                405                 410                 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
            420                 425                 430

Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
        435                 440                 445
```

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
450 455 460

Gly Gln Ile Leu Lys Gly Asp Asp Ala Lys Val Ser Met Glu Glu Arg
465 470 475 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
485 490 495

Ala Arg Ile

<210> 41
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 41
ttgctggaac ttgcacttgg t 21

<210> 42
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 42
gtatatgatg ggtaccttaa ttaagaaagg ag 32

<210> 43
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 43
gacgcctcac ttacgacaac tctgtg 26

<210> 44
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 44
cctctcggga cggaattctg atggt 25

<210> 45
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 45
gcggtgcacg ggcggactct tcttc 25

<210> 46
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 46
cgcccaatac gcaaaccgcc tctcc 25

<210> 47
<211> 1501
<212> DNA
<213> Beta vulgaris

<400> 47
tgtttctgca cttgcgtccc acacccactg caaaatcaaa agcacttcgc catctcccaa 60
acccaccaag cccaaagcct cgtcttccct tcataggaca ccttcatctc ttaaaagaca 120
aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggtccctta ttctctctct 180
actttggctc catgccaacc gttgttgcct ccacaccaga attgttcaag ctcttcctcc 240
aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctcagccata agacgcctca 300
cctatgatag ctcagtggcc atggttccct tcggacctta ctggaagttc gtgaggaagc 360
tcatcatgaa cgaccttctc aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc 420
aacagatccg caagttcctt agggttatgg cccaaggcgc agaggcacag aagccccttg 480
acttgaccga ggagcttctg aaatggacca acagcaccat ctccatgatg atgctcggcg 540
aggctgagga gatcagagac atcgctcgcg aggttcttaa gatctttggc gaatacagcc 600
tcactgactt catctggcca ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg 660
acgacatctt gaacaagttc gaccctgtcg ttgaaagagt catcaagaag cgccgtgaga 720
tcgtgaggag gagaaagaac ggagaggatg ttgagggtga ggtcagcggg gttttccttg 780
acactttgct tgaattcgct gaggatgaga ccatggagat caaaatcacc aaggaccaca 840
tcaagggtct tgttgtcgac tttttctcgg caggaacaga ctccacagcg gtggcaacag 900
agtgggcatt ggcagaactc atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg 960
tctacagtgt tgtgggaaag gacagacttg tggacgaagt agacactcaa aaccttcctt 1020
acattagagc aatcgtgaag gagacattcc gcatgcaccc gccactccca gtggtcaaaa 1080
gaaagtgcat agaagagtgt gagattaatg gatatgtgat cccagaggga gcattgattc 1140
tcttcaatgt atggcaagta ggaagagacc ctaaatactg ggacagacca tcggagttcc 1200
gtcctgagag gttcctagag acaggggctg aaggggaagc aaggcttctt gatcttaggg 1260
gacaacattt tcaacttctc ccatttgggt ctgggaggag aatgtgccct ggagtcaatc 1320
tggctacttc gggaatggca acacttcttg catctcttat tcagtgcttt gacttgcaag 1380
tgctgggtcc acaaggacag atattgaagg gtggtgacgc caaagttagc atggaagaga 1440
gagccggcct cactgttcca agggcacata gtcttgtctg tgttccactt gcaaggatcg 1500
g 1501

<210> 48
<211> 499
<212> PRT
<213> Beta vulgaris

<400> 48
Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
1 5 10 15

His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
20 25 30

```
His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
        35                  40                  45

Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
    50                  55                  60

Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
65                  70                  75                  80

Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
                85                  90                  95

Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro
            100                 105                 110

Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
        115                 120                 125

Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
    130                 135                 140

Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
145                 150                 155                 160

Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
                165                 170                 175

Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
            180                 185                 190

Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
        195                 200                 205

His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
    210                 215                 220

Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
225                 230                 235                 240

Val Arg Arg Arg Lys Asn Gly Glu Asp Val Glu Gly Glu Val Ser Gly
                245                 250                 255

Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
            260                 265                 270

Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
        275                 280                 285

Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
    290                 295                 300

Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val
305                 310                 315                 320

Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
                325                 330                 335

Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
            340                 345                 350
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Pro Pro Leu Pro Val Val Lys Arg Lys Cys Ile Glu Glu Cys Glu Ile
        355                 360                 365

Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
    370                 375                 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
385                 390                 395                 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Leu Leu
                405                 410                 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
            420                 425                 430

Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
        435                 440                 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
    450                 455                 460

Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
465                 470                 475                 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
                485                 490                 495

Ala Arg Ile
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<212> DNA
<213> Artificial Sequence

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<223> PCR primer

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<210> 50
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<213> Artificial Sequence

<220>
<223> PCR primer

<400> 50
gaattcgcgg ccgcgaattg ggtaccgggc 30

<210> 51
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer

<400> 51

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<210> 52
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<212> DNA
<213> Glycine max

<220>
<221> Intron
<222> (895)..(1112)

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c 1801

<210> 53
<211> 1900
<212> DNA
<213> Glycine max

<220>
<221> Intron
<222> (947)..(1082)

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cacaccagaa ttgttcaagc tcttcctcca aacgcacgag gcaacttcct tcaacacaag 360
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<210> 54
<211> 1501
<212> DNA
<213> Lupinus albus

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tgctgggtcc acaaggacag atattgaagg gtggtgacgc caaagttagc atggaagaga 1440
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g 1501

<210> 55
<211> 499

<212> PRT
<213> Lupinus albus

<400> 55
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His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
20 25 30

His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
35 40 45

Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
50 55 60

Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
65 70 75 80

Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
85 90 95

Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Arg Val Pro Phe Gly Pro
100 105 110

Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
115 120 125

Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
130 135 140

Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
145 150 155 160

Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
165 170 175

Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
180 185 190

Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
195 200 205

His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
210 215 220

Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
225 230 235 240

Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly
245 250 255

Val Leu Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu
260 265 270

Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
275 280 285

Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
290 295 300

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Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Arg Ala Arg Glu Glu Val
305                 310                 315                 320

Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
                325                 330                 335

Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
            340                 345                 350

Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
        355                 360                 365

Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
    370                 375                 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
385                 390                 395                 400

Pro Glu Arg Phe Leu Glu Thr Glu Ala Glu Gly Glu Ala Arg Pro Leu
                405                 410                 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
            420                 425                 430

Arg Met Cys Pro Gly Val Ile Leu Ala Thr Ser Gly Met Ala Thr Leu
        435                 440                 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
    450                 455                 460

Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
465                 470                 475                 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
                485                 490                 495

Ala Arg Ile
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<210> 56
<211> 1501
<212> DNA
<213> Medicago sativa

<400> 56

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aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggtccctta ttctctctct    180
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aaacgcacga ggcaacttcc ttcaacacaa ggttccaaac ctcagccata agacgcctca    300
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acttgaccga ggagcttctg aaatggacca acagcaccac ctccatgatg atgctcggcg    540
aggctgagga gatcagagac atcgcccgcg aggttcttaa gatctttggc gaatacagcc    600
tcactgactt catccggcca ttgaagcatc tcaaggttgg aaagtatgag aagaggatcg    660
acgacatctt gaacaagttc gaccctgtcg ttgaaagagt catcaagaag cgccgtgaga    720
tcgtgaggag gagaaagaac ggagaggttg ttgagggtga ggtcagcggg gttttccttg    780
acactttgct tgaattcgct gaggatgaga ccacggagat caaaatcacc aaggaccaca    840
tcaagggtct tgttgtcgac tttttctcgg caggaacaga ctccacagcg gtggcaacag    900
agtgggcatt ggcagaactc atcaacaatc ctaaggtgtt ggaaaaggct cgtgaggagg    960
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<210> 57
<211> 499
<212> PRT
<213> Medicago sativa

<400> 57

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His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
            20                  25                  30

His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
        35                  40                  45

Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
    50                  55                  60

Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
65                  70                  75                  80

Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
                85                  90                  95

Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Ala Pro Phe Gly Pro
            100                 105                 110

Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
        115                 120                 125

Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
    130                 135                 140

Phe Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
145                 150                 155                 160

Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Thr Ser Met Met
                165                 170                 175

Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
            180                 185                 190

Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Arg Pro Leu Lys
        195                 200                 205

His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
    210                 215                 220

Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
225                 230                 235                 240
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Val Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly
                245                 250                 255

Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu
            260                 265                 270

Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
        275                 280                 285

Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
    290                 295                 300

Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val
305                 310                 315                 320

Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
                325                 330                 335

Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
            340                 345                 350

Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
        355                 360                 365

Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
    370                 375                 380

Gln Val Gly Arg Asp Ser Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
385                 390                 395                 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu
                405                 410                 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
            420                 425                 430

Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
        435                 440                 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
    450                 455                 460

Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
465                 470                 475                 480

Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
                485                 490                 495

Ala Arg Ile
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<211> 1501
<212> DNA
<213> Medicago sativa

<400> 58
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aacttctcca ctacgcactc atcgacctct ccaaaaaaca tggtccctta ttctctctct 180

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cctatgatag ctcagtggcc atggttccct tcggacctta ctggaagttc gtgaggaagc    360
tcatcatgaa cgaccttctc aacgccacca ctgtaaacaa gttgaggcct ttgaggaccc    420
aacagatccg caagctcctt agggttatgg cccaaggcgc agaggcacag aagccccttg    480
acttgaccga ggagcttctg aaatggacca acagcaccat ctccatgatg atgctcggcg    540
aggctgagga gatcagagac atcgctcgcg aggttcttaa gatctttggc gaatacagcc    600
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tcgtgaggag gagaaagaac ggagaggtta ttgagggtga ggtcagcggg gttttccttg    780
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<210> 59
<211> 499
<212> PRT
<213> Medicago sativa

<400> 59

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Phe Leu His Leu Arg Pro Thr Pro Thr Ala Lys Ser Lys Ala Leu Arg
1               5                  10                  15

His Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly
            20                  25                  30

His Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp
        35                  40                  45

Leu Ser Lys Lys His Gly Pro Leu Phe Ser Leu Tyr Phe Gly Ser Met
    50                  55                  60

Pro Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln
65                  70                  75                  80

Thr His Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile
                85                  90                  95

Arg Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro
            100                 105                 110

Tyr Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala
        115                 120                 125

Thr Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys
    130                 135                 140

Leu Leu Arg Val Met Ala Gln Gly Ala Glu Ala Gln Lys Pro Leu Asp
145                 150                 155                 160

Leu Thr Glu Glu Leu Leu Lys Trp Thr Asn Ser Thr Ile Ser Met Met
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                165                 170                 175

Met Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu
            180                 185                 190

Lys Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys
        195                 200                 205

His Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn
    210                 215                 220

Lys Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile
225                 230                 235                 240

Val Arg Arg Arg Lys Asn Gly Glu Val Ile Glu Gly Glu Val Ser Gly
                245                 250                 255

Val Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Thr Glu
            260                 265                 270

Ile Lys Ile Thr Lys Asp His Ile Lys Gly Leu Val Val Asp Phe Phe
        275                 280                 285

Ser Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala
    290                 295                 300

Glu Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val
305                 310                 315                 320

Tyr Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln
                325                 330                 335

Asn Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His
            340                 345                 350

Pro Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile
        355                 360                 365

Asn Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Leu Phe Asn Val Trp
    370                 375                 380

Gln Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg
385                 390                 395                 400

Pro Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu
                405                 410                 415

Asp Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg
            420                 425                 430

Arg Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Met Ala Thr Leu
        435                 440                 445

Leu Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln
    450                 455                 460

Gly Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg
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Ala Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu
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Ala Arg Ile

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tctccactac gcactcatcg acctctccaa aaaacatggt cccttattct ctcactactt 180
tggctccatg ccaaccgttg ttgcctccac accagaattg ttcaagctct tcctccaaac 240
gaacgaggca acttccttca acacaaggtt ccaaacctca gccataagac gcctcaccta 300
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catgaacgac cttctcaacg ccaccactgt aaacaagttg aggcctttga ggacccaaca 420
gatccgcaag ttccttaggg ctatggccca aggcgcagag gcacggaagc cccttgactt 480
gaccgaggag cttctgaaat gggccaacag caccatctcc atgatgatgc tcggcgaggc 540
tgaggagatc agagacatcg ctcgcgaggt tcttaagatc tttggcgaat acagcctcac 600
tgacttcatc tggccattga agcatctcaa ggttggaaag tatgagaaga ggatcgacga 660
catcttgaac aagttcgacc ctgtcgttga aagagtcatc aagaagcgcc gtgagatcgt 720
gaggaggaga aagaacggag aggttgttga gggtgaggtc agcggggttt tccttgacac 780
tttgcttgaa ttcgctgagg atgagaccat ggagatcaaa atcaccaagg accacaccaa 840
gggtcttgtt gtcgacttct tctcggcagg aacagactcc acagcggtgg caacagagtg 900
ggcattggca gaactcatca acaatcctaa ggtgttggaa aaggctcgtg aggaggtcta 960
cagtgttgtg ggaaaggaca gacttgtgga cgaagttgac actcaaaacc ttccttacat 1020
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gtgcacagaa gagtgtgaga ttaatggata tgtgatccca gagggagcat tgattccctt 1140
caatgtatgg caagtaggaa gagaccccaa atactgggac agaccatcgg agttccgtcc 1200
tgagaggttc ctagagacag gggctgaagg ggaagcaagg cctcttgatc ttaggggaca 1260
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Leu Pro Asn Pro Pro Ser Pro Lys Pro Arg Leu Pro Phe Ile Gly His
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Leu His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Leu Ile Asp Leu
35 40 45

Ser Lys Lys His Gly Pro Leu Phe Ser His Tyr Phe Gly Ser Met Pro
50 55 60

Thr Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Thr
65 70 75 80

Asn Glu Ala Thr Ser Phe Asn Thr Arg Phe Gln Thr Ser Ala Ile Arg
85 90 95

Arg Leu Thr Tyr Asp Ser Ser Val Ala Met Val Pro Phe Gly Pro Tyr

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           100                 105                 110

Trp Lys Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr
        115                 120                 125

Thr Val Asn Lys Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Phe
    130                 135                 140

Leu Arg Ala Met Ala Gln Gly Ala Glu Ala Arg Lys Pro Leu Asp Leu
145                 150                 155                 160

Thr Glu Glu Leu Leu Lys Trp Ala Asn Ser Thr Ile Ser Met Met Met
                165                 170                 175

Leu Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys
            180                 185                 190

Ile Phe Gly Glu Tyr Ser Leu Thr Asp Phe Ile Trp Pro Leu Lys His
        195                 200                 205

Leu Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys
    210                 215                 220

Phe Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Glu Ile Val
225                 230                 235                 240

Arg Arg Arg Lys Asn Gly Glu Val Val Glu Gly Glu Val Ser Gly Val
                245                 250                 255

Phe Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Met Glu Ile
            260                 265                 270

Lys Ile Thr Lys Asp His Thr Lys Gly Leu Val Val Asp Phe Phe Ser
        275                 280                 285

Ala Gly Thr Asp Ser Thr Ala Val Ala Thr Glu Trp Ala Leu Ala Glu
    290                 295                 300

Leu Ile Asn Asn Pro Lys Val Leu Glu Lys Ala Arg Glu Glu Val Tyr
305                 310                 315                 320

Ser Val Val Gly Lys Asp Arg Leu Val Asp Glu Val Asp Thr Gln Asn
                325                 330                 335

Leu Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro
            340                 345                 350

Pro Leu Pro Val Val Lys Arg Lys Cys Thr Glu Glu Cys Glu Ile Asn
        355                 360                 365

Gly Tyr Val Ile Pro Glu Gly Ala Leu Ile Pro Phe Asn Val Trp Gln
    370                 375                 380

Val Gly Arg Asp Pro Lys Tyr Trp Asp Arg Pro Ser Glu Phe Arg Pro
385                 390                 395                 400

Glu Arg Phe Leu Glu Thr Gly Ala Glu Gly Glu Ala Arg Pro Leu Asp
                405                 410                 415

Leu Arg Gly Gln His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Arg
            420                 425                 430
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Met Cys Pro Gly Val Asn Leu Ala Thr Ser Gly Thr Ala Thr Leu Leu
435 440 445

Ala Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly
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Gln Ile Leu Lys Gly Gly Asp Ala Lys Val Ser Met Glu Glu Arg Ala
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Gly Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala
485 490 495

Arg Ile

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20 25 30

Pro Asn Pro Pro Ser Pro Xaa Pro Arg Leu Pro Phe Ile Gly His Xaa
35 40 45

His Leu Leu Lys Asp Lys Leu Leu His Tyr Ala Xaa Ile Asp Leu Ser
50 55 60

Lys Lys His Gly Pro Leu Phe Ser Xaa Xaa Phe Gly Ser Met Pro Thr
65 70 75 80

Val Val Ala Ser Thr Pro Glu Leu Phe Lys Leu Phe Leu Gln Xaa Xaa
85 90 95

Glu Ala Thr Ser Phe Xaa Thr Arg Phe Gln Thr Ser Ala Xaa Arg Xaa
100 105 110

Leu Thr Tyr Asp Xaa Xaa Val Ala Xaa Xaa Pro Xaa Gly Pro Tyr Trp
115 120 125

Xaa Phe Val Arg Lys Leu Ile Met Asn Asp Leu Leu Asn Ala Thr Thr
130 135 140

Val Asn Xaa Leu Arg Pro Leu Arg Thr Gln Gln Ile Arg Lys Xaa Leu
145 150 155 160

Arg Xaa Met Ala Gln Xaa Ala Glu Ala Xaa Lys Pro Leu Asp Xaa Thr
165 170 175

Glu Glu Leu Leu Lys Trp Xaa Asn Ser Thr Xaa Ser Met Met Xaa Leu
180 185 190

Gly Glu Ala Glu Glu Ile Arg Asp Ile Ala Arg Glu Val Leu Lys Ile
195 200 205

Xaa Gly Glu Tyr Ser Leu Thr Asp Phe Ile Xaa Pro Leu Lys Xaa Leu
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Lys Val Gly Lys Tyr Glu Lys Arg Ile Asp Asp Ile Leu Asn Lys Phe
225 230 235 240

Asp Pro Val Val Glu Arg Val Ile Lys Lys Arg Arg Xaa Ile Val Arg
245 250 255

Arg Arg Xaa Asn Gly Glu Xaa Xaa Glu Gly Glu Xaa Ser Gly Val Xaa
260 265 270

Leu Asp Thr Leu Leu Glu Phe Ala Glu Asp Glu Thr Xaa Glu Ile Lys
275 280 285

Ile Thr Lys Xaa Xaa Xaa Lys Gly Leu Val Val Asp Xaa Phe Ser Ala
290 295 300

Gly Xaa Asp Ser Thr Ala Xaa Xaa Thr Glu Trp Ala Leu Ala Glu Leu
305 310 315 320

Ile Asn Asn Pro Xaa Val Leu Xaa Xaa Ala Arg Glu Glu Xaa Tyr Ser
325 330 335

Val Val Gly Lys Asp Xaa Leu Val Asp Glu Val Asp Thr Gln Asn Leu
340 345 350

Pro Tyr Ile Arg Ala Ile Val Lys Glu Thr Phe Arg Met His Pro Pro
355 360 365

Leu Pro Val Val Lys Arg Lys Cys Xaa Glu Glu Cys Xaa Ile Asn Gly
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Xaa Val Xaa Pro Glu Gly Ala Leu Xaa Xaa Phe Asn Val Trp Gln Val
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Gly Xaa Asp Xaa Lys Tyr Trp Asp Arg Pro Ser Glu Xaa Arg Pro Glu
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Arg Phe Leu Glu Thr Xaa Ala Glu Gly Glu Ala Xaa Xaa Leu Asp Leu
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Arg Gly Xaa His Phe Gln Leu Leu Pro Phe Gly Ser Gly Arg Xaa Met
435 440 445

Cys Pro Gly Val Xaa Leu Ala Thr Ser Gly Xaa Ala Thr Leu Leu Ala
450 455 460

Ser Leu Ile Gln Cys Phe Asp Leu Gln Val Leu Gly Pro Gln Gly Gln
465 470 475 480

Ile Leu Lys Gly Xaa Asp Ala Lys Val Ser Met Glu Glu Arg Ala Gly
485 490 495

Leu Thr Val Pro Arg Ala His Ser Leu Val Cys Val Pro Leu Ala Arg
500 505 510

Ile Gly Val Ala Ser Lys Leu Leu Ser
515 520